

JSC Dariali Energy

Waste Management Plan

**TBILISI
2017**

CONTENT

| | | |
|-------|--|-------------------------------------|
| 1. | Purpose and scope of the document..... | 3 |
| 1.1 | Purpose | 3 |
| 1.2 | Scope..... | 3 |
| 2. | Introduction | 4 |
| 2.1 | Name and legal status of the facility..... | 4 |
| 2.2 | Management of the facility..... | 4 |
| 2.3 | Description of operation processes | 4 |
| 2.4 | Main specifications of the facility | 5 |
| 3. | Description of the waste sources and characterisation of waste..... | 5 |
| 3.1 | Waste sources | 5 |
| 3.2 | Characterisation of hazardous waste | 5 |
| 3.2.1 | Liquid waste polluted with petroleum hydrocarbons | 5 |
| 3.2.2 | Solid waste polluted with petroleum hydrocarbons | 5 |
| 3.3 | Storage of waste | 6 |
| 3.4 | Stock-taking of waste..... | 7 |
| 4. | Generated waste management | 8 |
| 4.1 | Measures to be implemented for waste prevention and recovery..... | 8 |
| 4.2 | Methods of collection and transportation of generated waste | 8 |
| 4.2.1 | Transportation of waste to their final destination | 8 |
| 4.3 | Method of separation | 8 |
| 4.4 | Methods and conditions of temporary storage of generated waste | 9 |
| 4.5 | Waste treatment methods | Error! Bookmark not defined. |
| 4.6 | Safe management of hazardous waste and appropriate training of the personnel | 11 |
| 4.7 | Waste transfer and transportation for final placement and recovery | Error! Bookmark not defined. |
| 5. | Annexes..... | 14 |

1. Purpose and scope of the document

1.1 Purpose

The Waste Management Plan of JSC Dariali Energy has been developed in accordance with Article 14 of the Waste Management Code of Georgia, and the procedure established by Order No 211 of 4 August 2015 of the Minister of Environment and Natural Resources Protection of Georgia on Approval of the Procedure for Review and Agreement of the Waste Management Plan of a Company, the purpose of which is to meet the requirements of the above legislation by the existing waste management system of a company.

The document includes the description of 108 MW hydro power plant (HPP) of JSC Dariali Energy and the following principles of waste management system:

The production function of the facility is described; the characteristics, classification and stock-taking of the waste generated during the working process is presented; the measures for prevention and recovery of waste; the methods of collection and transportation of the generated waste; the separation method is described together with the conditions of temporary storage of generated waste; the measures for safe management of hazardous waste and appropriate training of the personnel are defined.

The information on the waste management companies is also included, these companies will be engaged to provide collection, transportation and treatment of waste, appropriate permission and registration data of the waste companies is also provided.

1.2 Scope

The waste, generated during the functioning of 108 MW HPP, must be managed according to this plan. It is necessary to fulfil the issues and obligations reviewed in the plan, the failure of which will result in activation of the sanctions determined by Georgian law.

The Waste Management Plan has been developed for the period of three years and is effective from 1 January 2017 to 31 December 2019 inclusive, which must be updated and submitted to the Ministry of Environment and Natural Resources Protection of Georgia before 1 January 2020. In case of any changes, which may be made in the waste management system or in this Plan, it must be agreed with the Ministry before the implementation of the changes.

2. Introduction

2.1 Name and legal status of the facility

The name of the facility is 108 MW Dariali HPP owned by JSC Dariali Energy. Date of registration of the company is 09/12/2010. The address of the HPP is Stepantsminda Settlement, Dariali Valley, opposite the Larsi border checkpoint.

The address of the JSC Dariali Energy is: factual address – No 4, Besiki Str., Tbilisi; Tel: +99532 2 510 500; Fax: + 99532 2 510 500; legal address – No 8 Chachava Str., Tbilisi; Identification Number 401 953 061.

2.2 Management of the facility

Technical Director of JSC Dariali Energy Konstantine Iordanashvili, contact information: Tel: 599 720 230; E-mail: k.iordanishvili@darialienergy.ge
Chief Engineer of Dariali HPP Ilia Kamkamidze. TEL: 598 760 796;
Email: ilia.kamkamidze@hotmail.com.

Chief Engineer of Dariali HPP Tamaz Urekadze. Tel: 591 913 332;
E-mail: t.urekadze@gmail.com

Environmental Manager of the company is the Technical Director of JSC Dariali Energy Konstantine Iordanishvili, contact information: Tel: 599 720 230; E-mail: k.iordanishvili@darialienergy.ge

2.3 Description of operation process

During the process of its operation the 108 MW HPP of the JSC Dariali Energy collects the water from the river Tergi and directs it to the HPP, as a result of treatment of which it generates electricity and transmits the generated electricity via 110 kW Stepantsminda transmission lines. Accordingly, electricity is generated as a result of a technological cycle and new type of waste is not generated.

1. JSC Dariali Energy runs the Dariali HPP in the Stepantsminda Settlement, on the river Tergi. The project includes operation of the HPP with the installed capacity of 108 MW in the north-east of Georgia, in the Stepantsminda Region, on the river Tergi, downstream the river, 1729 meters above the sea level. The HPP collects water from the river Tergi and directs that water through the derivation tunnel to the general building, which is located 1334 above the sea level, 1.2 km away from the Russia-Georgia border.
2. This water is flown into the HPP building by the headrace pipeline and tunnel, where it is treated and the electricity is generated. The electricity is transmitted via 110 kW

Stepantsminda transmission lines and the processed water is supplied to the Larsi HPP and then returned to the Tergi riverbed.

2.4 Main specifications of the facility

The facility works every day, 365 days a year, 24 hours a day. The following technological equipment is used in the process of operation of the HPP: water catchment tank, sedimentation and lower tailrace tanks. High pressure iron and tunnel pipelines, 3 hydro generators with the capacity of 36 MW; two diesel generators of 120 kva and 400 kva capacities; and 3 power transformers of 45 MW capacity.

3. Description of the waste sources and characterisation of waste

3.1 Waste sources

Domestic (municipal) and hazardous (petroleum) waste is generated on the facility. The amount of the domestic waste depends on the number of the personnel. If we consider that about 0.73 m³ solid domestic waste is accumulated per one employee per year, then:

$$38 \times 0,73 = 27,74 \text{ m}^3/\text{year}$$

Domestic waste is collected and placed in special containers (with the capacity of 120 l) located on the territory of the facility, which are removed by the Stepantsminda Settlement municipal cleaning service, on the basis of a preliminarily concluded agreement. The domestic waste is moved to and placed on the solid domestic waste dumping ground of the Stepantsminda Settlement, which is operated by the Stepantsminda Settlement municipal cleaning service.

Due to the specifics of the activities of the facility, the following hazardous industrial waste may be generated there:

- oil, oil filters, rags, glass, wood materials, metals (scrap metals);
- biodegradable kitchen waste, plastics, metal, glass;
- river debris: polyethylene, plastic, paper and cardboard, wood waste;
- fluorescent pipes and other waste containing mercury;
- batteries, accumulators, concrete waste.

The information on the types, quantity and hazard classes of the industrial waste, generated in the process of current operation of the facility is given in point 3.4 – Inventory of waste.

3.2 Characterization of hazardous waste

3.2.1 Liquid waste polluted with petroleum hydrocarbons

The liquid waste, polluted with the petroleum generated in the process of current activities, is as follows:

- water and oil slime polluted with the oil generated by washing of the transformer reservoirs;
- sediment and slime accumulated in the petroleum product catchment tanks;
- treated lubrication materials.

Water and oil sludge, polluted with the oil generated by washing of the transformer reservoirs, will be stored on the facility in a special reservoir. After that the waste will be removed by a contractor company after the accumulation of certain amount the liquid waste will be transferred to the waste management company Medical Technology for incineration. It is possible to generate 50-100 liters of liquid oil waste with per year.

3.2.2 Solid waste polluted with petroleum hydrocarbons

The following are important among the solid waste polluted with petroleum hydrocarbons:

- Rags, cleaning and absorbing materials (absorbents) polluted with petroleum;
- Overall polluted with petrol, which cannot be washed and recovered;
- Petroleum details and parts generated as a result of scheduled repair works.

The solid waste polluted with the petroleum hydrocarbons are accumulated in the containers with special marking located on the territory of the HPP. JSC Dariali Energy has concluded an agreement with the contractor (Medical Technology LTD), having an appropriate permit for that activity, on decontamination of the solid waste polluted with petroleum hydrocarbons. Waste is decontaminated by Medical Technology LTD.

Before the processing of these details and parts into waste, the specialists evaluate their condition for re-use, for which they are moved into a warehouse and stored. For that reason they are not placed in the waste bins located on the facility.

3.3 Storage of waste

Waste is stored in 120 l (0,12 m^3) plastic containers, existing on the facility, which are located in specially designated places. Polyethylene bags are inserted into the containers, in which the waste is accumulated. The signs, specifying the content, are put on the containers. Containers of the following type and colour are collated in the facility for waste collection:

1. solid hazardous waste (red);
2. sand polluted with petroleum (red);
3. domestic waste (blue or green);
4. 500 l. bins of the municipal cleaning service.

3.4 Stock-taking of waste

The stock-taking, carried out in the facility, is given in a form of state accounting.

| N | List of waste generated in the facility | | | | | | | |
|-----|---|--|--------------------|---------------------|--------------------|-----------------------------|-----------------------|-----------------------|
| | Code of waste | Name of waste | Hazardous (yes/no) | Indicator of hazard | Physical condition | Quantity according to years | | |
| | | | | | | 2017 | 2018 | 2019 |
| 1. | 20 03 01 | Plastic | No | R 3 D 10 | Solid | 0,5-1 t per year | 0,5-1 tper year | 0,5-1 tper year |
| 2. | 20 03 01 | Glass | No | R 5 D 9 | Solid | 0,1-0,5 t. | 0,1-0,5 t. | 0,1-0,5 t. |
| 3. | 20 03 01 | Metals | No | R 4 D 1 | Solid | 2 m ³ | 2 m ³ | 2 m ³ |
| 4. | 20 03 01 | Paper and cardboard | No | R 5 D 1 | Solid | 0,05 – 0,1 tper year | 0,05 – 0,1 t per year | 0,05 – 0,1 t per year |
| 5. | 20 03 01 | Kitchen biodegradable waste | No | D 1 | Solid /liquid | 0,5-1 tper year | 0,5-1 tper year | 0,5-1 tper year |
| 6. | 20 01 38 | Wood materials, which are not included in point 20 01 37 | No | R 1 | Solid | 200-300 unitper year | 50 – 100 unitper year | 0-50 unitper year |
| 7. | 16 01 21* | Hazardous components, which are not included in points: from 16 01 07 to 16 01 11 and in 16 01 13 and 16 01 14 | Yes | R 9 D 10 | Liquid | 0,1-0,5 t. | 0,1-0,5 t. | 0,1-0,5 t. |
| 8. | 15 02 02* | Absorbents, filter materials (including oil filters, which are not included in other categories), cleaning rags and protective clothing, which are contaminated with hazardous chemicals | Yes | D 10 | Solid | 0,1-0,5 t. | 0,1-0,5 t. | 0,1-0,5 t. |
| 9. | 16 01 07* | Oil filters | Yes | R 9 D 10 | Solid | 0,1-0,5 t. | 0,1-0,5 t. | 0,1-0,5 t. |
| 10. | 20 01 21* | Fluorescent pipes and other waste containing mercury | Yes | D 9 | Solid / liquid | 0,1-0,5 t. | 0,1-0,5 t. | 0,1-0,5 t. |
| 11. | 16 07 08* | Waste containing petroleum | Yes | R 9 D 10 | Solid / liquid | 0,1-0,5 t. | 0,1-0,5 t. | 0,1-0,5 t. |
| 12. | 16 06 04 | Alkaline batteries (except for 16 06 03) | No | D 10 | Solid | 0,1-0,5 t. | 0,1-0,5 t. | 0,1-0,5 t. |

4. Generated waste management

4.1 Measures to be implemented for waste prevention and recovery

The preventive measure for the generation of waste is neutralization of the possibility of spillage of lubricating materials and transformer oils and minimization of the repair works;

The schedule of planned repair works has been developed, which includes washing of transformers once a year for the purpose of cleaning them from the sediment materials. The repair works are minimally determined, based on the current exploitation needs, the reduction of which will lead to the difficulties in the production cycle. It is notable that, during the scheduled repair works carried out on the equipment, replaced details are checked for their recovery and re-use purposes, which leads to the reduction of waste containing petroleum.

4.2 Methods of collection and transportation of generated waste

The waste generated in the facility is placed in the containers by local personnel, while the waste is collected for removal and then transported by a contractor company Medical Technology by using individual protection means provided for by law.

4.2.1 Transportation of waste to their final destination

Liquid and solid hazardous waste will be transported from the place of temporary disposal of waste, located on the temporary of Dariali HPP of the JSC Dariali Energy, to the final destination of the waste by the vehicles of Medical Technology to the village Martkopi, on the territory of the waste disposal (incineration) plant of the Medical Technology LTD (environmental examination opinion № 74; 29.12.2015)

4.3 Method of separation

Waste separation is a priority issue for standard waste management.

120 m³ bins are located in the facility, in which the waste will be placed according to types and categories. Based on the specifics of the facility the following waste is generated: solid and liquid waste polluted with petroleum, sand and cleaning materials polluted with petroleum (absorbents, rags and others).

Depending on which waste will be produced, the waste will be treated either by Medical Technologies or by the Municipal cleaning service. Chief Hydro technic will be assigned on the Headworks to call to relevant waste cleaning service and Plant managers will be assigned on the Powerhouse to call to relevant waste cleaning service.

The following waste bins will be placed in the Dariali hydro power plant:

1. solid hazardous waste (red);
2. sand polluted with petroleum (red);

3. domestic waste (blue or green);
4. 4 bins with the capacity of 500 liters of the municipal cleaning service, which will be placed and served by the Kazbegi Municipality;
5. 200 l. barrels for turbine oils for the purpose of transportation of used oils will be stored in a special place;
6. transformer oil catchment pit, which is connected with the pipeline to the 5 t. tank, from which it will be filled and then transported by the contractor company;
7. A special bin for the rags and clothing polluted with oil products, which will be emptied once a quarter or as necessary. When full, a contractor company will be applied to for its transportation;
8. Liquid hazardous waste containing petroleum will not be stored on the territory of the facility. In case of generation of such waste (as a result of washing bearings and reservoirs) a contractor company will be applied to for the transportation of the waste.

To improve separation of waste, waste containers are marked with the signs specifying their content.

The employees of the facility will be trained in the issues of environmental requirements and waste management, which will be documented.

Trainings are delivered twice a year, and daily instructions are given every day by the Health and Safety Manager of the facility.

4.4 Methods and conditions of temporary storage of generated waste

Special 120 l (0,12m³) containers are located on the territory of the facility, in a safe place in order to prevent the possibility of their damage by the vehicles moving across the territory. Polyethylene bags are put in the containers, in which the waste is collected. Containers are tightly and hermetically closed in order to prevent exposure of waste in the environment. Containers bear special marking specifying their content, for example: “solid hazardous waste”, “sand polluted with petroleum”, “domestic waste”.

Waste separation is a necessity, which includes only placement of only those types of waste in the containers, which are specified in the markings on those containers.

Small containers for domestic waste are also placed in the office area.

Minimum amount of waste will be stored on site. Waste will be removed from the territory when it exceeds 2/3 of the total volume of the containers. Filling of containers will be controlled on daily basis and in case of accumulation of that amount, the waste management company will be notified accordingly for the purpose of removal of the waste from the facility.

Temporary storage of waste will prevent accidental leaks or spills, contamination of ground or underground waters, deformation or damage of the containers as a result of accidental collision, contact with air by means of secondary packaging and/or the use of caps;

4.5 Waste treatment methods

The waste generated in the facility will be transported and treated by the waste management company Medical Technology, which has the licence for performing such activities.

The company is equipped with the equipment and the incinerator necessary for waste management.

The hazardous waste, generated in the Dariali HPP facility of the JSC Dariali Energy will be treated according to the codes, specified in the state form of waste stock-taking:

| N | List of waste generated in the facility | | | | |
|----|---|--|----------------------------------|--|---|
| | Code of waste | Name of waste | Disposal/recovery operation code | Company disposing and treating the waste | Treatment method |
| 1. | 20 03 01 | Plastic | R 3 D 10 | Non-entrepreneurial non-commercial legal entity Kasbegi Municipal Improvements Service | Will be recovered and re-used |
| 2. | 20 03 01 | Glass | R 5 D 9 | Non-entrepreneurial non-commercial legal entity Kasbegi Municipal Improvements Service | Will be carried out by the Municipal service |
| 3. | 20 03 01 | Metals | R 4 D 1 | Non-entrepreneurial non-commercial legal entity Kasbegi Municipal Improvements Service | Metal will be recovered and re-used |
| 4. | 20 03 01 | Paper and cardboard | R 5 D 1 | Non-entrepreneurial non-commercial legal entity Kasbegi Municipal Improvements Service | Will be incinerated |
| 5. | 20 03 01 | Kitchen biodegradable waste | D 1 | Non-entrepreneurial non-commercial legal entity Kasbegi Municipal Improvements Service | Dismantled, waste will be removed and cleaned, then waste will be recycled and the casing will be incinerated |
| 6. | 20 01 38 | Wood materials, which are not included in point 20 01 37 | R 1 | Non-entrepreneurial non-commercial legal entity Kasbegi Municipal Improvements Service | Will be donated to the local community |
| 7. | 16 01 21* | Hazardous components, which are not included in points: from 16 01 07 to 16 01 11 and in 16 01 13 and 16 01 14 | R 9 D 10 | Medical Technology LTD | Will be incinerated |
| 8. | 15 02 02* | Absorbents, filter materials (including oil filters, which are not included in other categories), cleaning rags and protective clothing, which are contaminated with hazardous chemicals | D 10 | Medical Technology LTD | Will be incinerated |

| | | | | | |
|-----|--------------|--|-------------|---------------------------|---|
| 9. | 16 01 07* | Oil filters | R 9 D 10 | Medical Technology LTD | Oil filters will be washed and then incinerated |
| 10. | 20 01 21* | Fluorescent pipes and other waste containing mercury | D 9 | Medical Technology LTD | Mercury will be removed with special equipment and stored for final launching. Remained mass (metal) will be recycled |
| 11. | 16 07 08* | Waste containing petroleum | R 9 D 10 | Medical Technology LTD | Will be washed from petroleum; waste containing petroleum will be cleaned; the remaining mass will be incinerated |
| 12. | 16 06 04 | Alkaline batteries (except for 16 06 03) | D 10 | Medical Technology LTD | Will be incinerated |

4.6 Safe management of hazardous waste and appropriate training of the personnel

All employees of the facility, who have any relation with hazardous or municipal waste (including chief engineers, managers, operators, shift managers, cleaners, waste transporters, etc.) will undergo special training in the following environmental issues:

- characterisation, classification and properties of waste;
- appropriate segregation rules and procedures;
- care obligation system and accurate documentation procedure;
- waste disposal (use of personal protection means);
- waste treatment;
- waste storage

The rule of waste disposal, especially of hazardous waste disposal must be specific in relation with each type of waste (solid, liquid). Appropriate environmental and waste disposal instructions will be available in the facility, such as: description of hazardous waste, disposal rules, individual protection means, etc.

The personnel, occupied in the waste management area (collection, storage, transportation, receipt/delivery) has undergone appropriate trainings in health and professional safety issues.

The personnel is provided with special clothing, shoes and individual protection means. If necessary, the clothes of the personnel is subject to special treatment, especially after performing the operations related to hazardous waste.

The personnel has undergone first aid trainings, which is important for providing first aid and in case of poisoning and getting injuries during working with the waste.

Persons, who have not undergone appropriate training, who have no special clothing or have any signs of illness, will not be allowed to work.

It is prohibited to place more waste than allowed in the places of collection of waste. Waste must not be placed near the spark and heat sources.

In case of placement of several types of waste together, their compatibility must be taken into consideration.

Foreign subjects, personal clothes, special clothes, individual protection means must not be stored in the places of accumulation waste, as well as eating in such places is prohibited.

The rules of personal hygiene must be strictly followed during working with industrial waste.

If any signs of poisoning are present, work must be terminated and a person must apply to the nearest medical centre and notify the management in this regard.

The places of collection of fire hazard waste are equipped with anti-incendiary tools. Smoking and use of open fire is strictly prohibited in such places.

The personnel must know the characteristics of the waste and the firefighting rules. Burning easily inflammable or liquid fuels may be extinguished by fire extinguishers (ABC Dry Powder), sand or Fire Blanket. Burning petroleum waste must not be extinguished with water.

4.7 Waste transfer and transportation for final placement and recovery

Transfer of waste to the Medical Technology LTD will be documented in an appropriate manner, by filling in the waste transfer form. In each case the following information must be included in such form:

- place, date and time of transfer;
- description of waste, by specifying the quantity (m³/liter/kg);
- information on the waste producers;
- information on the waste transporters;
- information on the receiving entities;
- signatures of the representatives of producers, transporters and recipients

The filled in waste transfer form will be attached to all way bills from the place of generation of waste or facility to the place of treatment or disposal, i.e. treatment aggregate, incinerator, etc. The waste transfer form must include the description of waste, its chemical composition, process of generation, rule of packaging, total amount of the transferred waste and other relevant information.

The waste transfer form will be prepared in three counterparts. The formal procedure of waste transfer is as follows:

- waste transfer form is signed by the Chief Engineer of authorised person of the facility and the representative of the Medical Technology LTD, which removes and transports the waste;
- upper copy (first copy) will remain in the facility and will be stored in the archive;
- two lower copies will accompany the waste to their treatment and/or disposal place;

- the transporter to the disposal facility (Medical Technology) is obliged to make an appropriate authorised person to sign. It must also be indicated that the waste was received to its place of destination;
- after that the second copy will remain at the treatment or disposal facility;
- the third copy will remain with the transporter, which will take it to its office; at the time of following removal of waste, the transporter must bring the third copy to the waste generation place;
- the third copy will remain at the waste generation place and will be stored with the first copy;
- the photocopy of the third copy will be made at the waste generation place, which will be sent to the environmental group in relation with the fulfilment of accounting obligations.

Filled in waste transfer forms will be kept during the whole period of operation of the facility.

The authorised person is obliged not to transfer the waste and not to sign the waste transfer form if he/she has the reason to believe that the waste have not property reached their final destination.

The waste, which are subject to secondary treatment, must be removed from the territory of the plant by an appropriate contractor company on the basis of the preliminarily concluded agreement.

Domestic waste is collected in special containers located on site. Such waste is removed by the local municipal cleaning services on the basis of an appropriate agreement according to the prepared schedule.

5. Annexes

National Archives of Georgia

Order No **1037**

Of the Minister of Environment and Natural Resources Protection of Georgia

Tbilisi

30 December 2015

On approval of environmental examination opinion on establishment and exploitation of waste disposal (incineration) plant of Medical Technology LTD

On the basis of Article 4(1)(f) and (4) of the Law of Georgia on Environmental Impact Permit I hereby

order:

1. To be approved environmental examination opinion No 74 of 29.12.2015, submitted by the Gamgeoba of Gardabani Municipality, on the establishment and exploitation of the waste disposal (incineration) plant of Medical Technology LTD in the village Martkopi;
2. The environmental examination opinion, determined by paragraph 1 of the Order, to be issued for an indefinite term;
3. Medical Technology LTD shall ensure fulfilment of the conditions determined by the environmental examination opinion (No 74; 29.12.2015);
4. The Order to be immediately sent to the Medical Technology LTD;
5. The Order shall enter into force upon its familiarization by the Medical Technology LTD;
6. This Order may be appealed in the senior administrative body, the Government of Georgia (No 7, Ingorokva Street, Tbilisi) or Administrative Panel of Tbilisi City Court (No 6, 12th km., D. Aghmashenebeli Avenue, Tbilisi) within one month after its official communication by the party.

Minister
Agulashvili

(signed)

Gigla

Ministry of Environmental and Natural Resources Protection of Georgia

No 6, Gulua Str., Tbilisi, 0114, Georgia, Tel: 272-72-00; Fax: 272-72-37

Environmental Examination Opinion on the Project

No 74

29 December 2015

I. Background information

1. **Name of the activity** – establishment and exploitation of the waste disposal (incineration) plant.
2. **Name and address of the entity performing the activity** – Medical Technology LTD, No 4, Iv. Javakhishvili Str., Tbilisi.
3. **Location of performance of the activity** – village Martkopi, Gardabani Municipality.
4. **Date of submission of the application** – 16.12.2015.
5. **Data of the entity drawing up the project** - Medical Technology LTD.

II. Main project decisions

For the purpose of approval of the environmental examination opinion, the Gamgeoba of Gardabani Municipality has submitted for environmental examination the environmental impact assessment report of the establishment and exploitation of the waste disposal (incineration) plant of Medical Technology LTD.

According to the environmental impact assessment:

The plant will be located in the village Martkopi, Gardabani Region. The territory of the plant is the ownership of Medical Technology LTD, which is proved by the excerpt from the Public Registry (cadastral code No 81.10.17.316). The nearest populated area from the plant is located 1200 meters away. The poultry raising plant is located 370 meters away from the plant.

The report specifies the permissible project norms of emissions of harmful substances generated as a result of the activities, also the ecological and climate conditions of the region where the plant is located, the technological regulations and the scheme.

No hazardous geodynamic processes have been identified on the territory of the plant, and the territory is distinguished with high quality of sustainability.

The territory of the plant is a non-agricultural plot of land, which no longer has the fertile layer of soil.

Two incinerators will be placed in the plant, with 150 kg/h capacity of each. The plant will operate 340 days a year, with 16 hours working regime. In case of full workload of the plant it will be possible to neutralise 1632 tons of waste a year. 10 persons will be employed at the plant.

The purpose of activities of the Medical Technology LTD is to incinerate medical waste of A, B, C and D class, pharmaceutical industrial waste, expired medicines, medicine waste subject to special control, food and hygiene product waste, waste paper, ground, rags, special clothing and filter waste soaked with petroleum products, which are accumulated at various organisations, organic waste, bio-organic and other waste accumulated at poultry raising plants and slaughterhouses, as well as non-explosive liquid and others.

The constructive parts of the incinerators will be assembled on the basis of concrete foundation.

First of all the supplied waste will be separated at the plant into the waste containing metal and the pharmaceutical waste. This operation ensures sorting of the waste, originated as a result of incineration of waste, according to their content.

The incinerators consist of upper and lower horizontal and vertical chambers. The external casing of incinerators is made of 4-5 mm. thick metal, and internal part is inlaid with thermal insulation material and refractory bricks.

Main mass of the waste will be incinerated in the upper horizontal chamber, which is equipped with waste loading window and the grate. Waste will be loaded in the incinerators manually through the loading window of the upper horizontal chamber. Unburnt solid particles will mainly move to the vertical chamber in a form of air, where the burning temperature is 1300 °C. Solid particles will be fully burnt in the vertical chamber, which will significantly reduce emission of harmful substances in the atmospheric air. The aggregate is intended for periodical operation.

Liquid waste will be supplied to the kiln through a special refractory pipe, located in the hole of the horizontal chamber, and it will be incinerated in the refractory bowl placed on the grate of upper chamber.

Ash will be accumulated in the lower horizontal chamber, from which it will be periodically removed.

As a result of operation of the facility Nitrogen dioxide, Sulphur dioxide, Carbon monoxide, soot, mercury, hydrogen chloride (Hydrochloric acid), Sulfuric acid will be emitted in the air.

According to the Harmful Substance Emission Report prepared in accordance with the reporting methodology referred to in Ordinance No 408 of 31 December 2013 of the Government of Georgia, the concentration of harmful substances emitted in the atmospheric air as a result of operation of the facility (or the concentration of substances having overall impact) does not exceed respective standard norms in relation to the nearest facility (poultry raising plant) to the plant (370 m.), therefore the quantity of the emitted harmful substances is qualified as threshold limit emissions.

Under the current air protection legislation, the Draft Norms for Threshold Limit Values of Emission of Harmful Substances in the Atmospheric Air has been drawn up and agreed with the Ministry of Environment and Natural Resources Protection of Georgia.

The plant uses water for drinking and household activities, for the kiln cooling system, industrial, technical and anti-incendiary purposes. Drinking water will be supplied to the plant in special tanks. For technical purposes water will be supplied to the plant by the channel located near the plant.

For industrial purposes water will be consumed at the car washing station, where vehicles will be washed after the transportation of waste, and the floor of temporary storages of waste will be washed. The wastewater, generated in this process, will be collected in a special reservoir after going through the settler. The wastewater will be treated (disinfected) with chlorine or anolyne in that same reservoir, and then it will be directed to the Rustavi-Gardabani sewage system on the basis of an agreement.

As for the drain water, generated on the territory of the plant, the drain water generated in the sections of the territory of the plant where potential sources of their contamination are located (warehouses) will be collected in the underground reservoir through the internal sewage system. The contaminated drain water, collected in the reservoir, will undergo laboratory control and then will be directed to the Rustavi-Gardabani sewage system on the basis of an agreement.

In case of operation of the plant at the full workload the level of noise at the nearest populated house will not exceed the established threshold limit values.

Impact on soil, surface waters and groundwater is not expected at the stage of exploitation of the plant.

Industrial and domestic waste will be generated at the plant. Domestic waste will be collected in the containers, located on the territory of the plant, and will be incinerated in the incinerators of the plant. The waste of the packing materials, generated in the plant, will be utilized in the plant and the ash, generated at the stage of exploitation of the plant, will be at first placed in its storage places for cooling and then put into polyethylene bags and placed in the same room.

For the purpose of identification of the content of toxic elements in the ash it will be periodically monitored, and further management will be planned on the basis of the monitoring results. Namely, if toxic elements are not found in the ash, it may be placed on the dumping

ground of solid domestic waste; if toxic elements are found in the ash, it will be transferred to the organisations having appropriate permits.

The report includes emergency situations expectable in the course of activities and the proposals for prevention of their consequences, as well as the proposals for drawing up environmental monitoring plans.

The conditions identified as a result of the environmental examination are given in Chapter III of this opinion.

III. Conditions

The management of the plant is obliged:

1. to carry out the activities during the period of establishment and exploitation of the plant in accordance with the submitted environmental impact assessment report, monitoring plan and mitigation measures;
2. to notify the Ministry of Environment and Natural Resources Protection of Georgia upon the commencement of the activities;
3. to ensure observance of release and emission sources determined in the Draft Norms for Threshold Limit Values of Emission of Harmful Substances in the Atmospheric Air, as well as the specifications of gas and dust trapping devices and accordingly observance of the established emission threshold limit values;
4. for the purpose of establishment of hazard of the ash generated in the plant, to monitor its content and further dispose it on the basis of the monitoring results;
5. to draw up the waste management plan of the company and submit it for agreement to the Ministry of Environment and Natural Resources Protection of Georgia before 31 December 2016;
6. in case of transfer of the environmental examination opinion to another person, transfer the opinion according to the procedure established by the Law of Georgia on Environmental Impact Permits.

IV. Conclusion

For the purpose of approval of the environmental examination opinion, the activity may be carried out only according to the conditions of Chapter III of this Opinion, under the environmental impact assessment report of the establishment and exploitation of the waste disposal (incineration) plant of the Medical Technology LTD, submitted for environmental examination by the Gamgeoba of Gardabani Municipality.

Head of Environmental Impact Permit Department

Tamar Sharashidze

(Name, surname)

(signed)

Seal: Ministry of Environment and Natural Resources Protection of Georgia

204861943

National Archives of Georgia

Order No **1037**

Of the Minister of Environment and Natural Resources Protection of Georgia

Tbilisi

30 December 2015

On approval of environmental examination opinion on establishment and exploitation of waste disposal (incineration) plant of Medical Technology LTD

On the basis of Article 4(1)(f) and (4) of the Law of Georgia on Environmental Impact Permit I hereby

order:

1. To be approved environmental examination opinion No 74 of 29.12.2015, submitted by the Gamgeoba of Gardabani Municipality, on the establishment and exploitation of the waste disposal (incineration) plant of Medical Technology LTD in the village Martkopi;
2. The environmental examination opinion, determined by paragraph 1 of the Order, to be issued for an indefinite term;
3. Medical Technology LTD shall ensure fulfilment of the conditions determined by the environmental examination opinion (No 74; 29.12.2015);
4. The Order to be immediately sent to the Medical Technology LTD;
5. The Order shall enter into force upon its familiarization by the Medical Technology LTD;
6. This Order may be appealed in the senior administrative body, the Government of Georgia (No 7, Ingorokva Street, Tbilisi) or Administrative Panel of Tbilisi City Court (No 6, 12th km., D. Aghmashenebeli Avenue, Tbilisi) within one month after its official communication by the party.

Minister
Agulashvili

(signed)

Gigla

Ministry of Environmental and Natural Resources Protection of Georgia

No 6, Gulua Str., Tbilisi, 0114, Georgia, Tel: 272-72-00; Fax: 272-72-37

Environmental Examination Opinion on the Project

No 74

29 December 2015

I. Background information

6. **Name of the activity** – establishment and exploitation of the waste disposal (incineration) plant.
7. **Name and address of the entity performing the activity** – Medical Technology LTD, No 4, Iv. Javakhishvili Str., Tbilisi.
8. **Location of performance of the activity** – village Martkopi, Gardabani Municipality.
9. **Date of submission of the application** – 16.12.2015.
10. **Data of the entity drawing up the project** - Medical Technology LTD.

II. Main project decisions

For the purpose of approval of the environmental examination opinion, the Gamgeoba of Gardabani Municipality has submitted for environmental examination the environmental impact assessment report of the establishment and exploitation of the waste disposal (incineration) plant of Medical Technology LTD.

According to the environmental impact assessment:

The plant will be located in the village Martkopi, Gardabani Region. The territory of the plant is the ownership of Medical Technology LTD, which is proved by the excerpt from the Public Registry (cadastral code No 81.10.17.316). The nearest populated area from the plant is located 1200 meters away. The poultry raising plant is located 370 meters away from the plant.

The report specifies the permissible project norms of emissions of harmful substances generated as a result of the activities, also the ecological and climate conditions of the region where the plant is located, the technological regulations and the scheme.

No hazardous geodynamic processes have been identified on the territory of the plant, and the territory is distinguished with high quality of sustainability.

The territory of the plant is a non-agricultural plot of land, which no longer has the fertile layer of soil.

Two incinerators will be placed in the plant, with 150 kg/h capacity of each. The plant will operate 340 days a year, with 16 hours working regime. In case of full workload of the plant it will be possible to neutralise 1632 tons of waste a year. 10 persons will be employed at the plant.

The purpose of activities of the Medical Technology LTD is to incinerate medical waste of A, B, C and D class, pharmaceutical industrial waste, expired medicines, medicine waste subject to special control, food and hygiene product waste, waste paper, ground, rags, special clothing and filter waste soaked with petroleum products, which are accumulated at various organisations, organic waste, bio-organic and other waste accumulated at poultry raising plants and slaughterhouses, as well as non-explosive liquid and others.

The constructive parts of the incinerators will be assembled on the basis of concrete foundation.

First of all the supplied waste will be separated at the plant into the waste containing metal and the pharmaceutical waste. This operation ensures sorting of the waste, originated as a result of incineration of waste, according to their content.

The incinerators consist of upper and lower horizontal and vertical chambers. The external casing of incinerators is made of 4-5 mm. thick metal, and internal part is inlaid with thermal insulation material and refractory bricks.

Main mass of the waste will be incinerated in the upper horizontal chamber, which is equipped with waste loading window and the grate. Waste will be loaded in the incinerators manually through the loading window of the upper horizontal chamber. Unburnt solid particles will mainly move to the vertical chamber in a form of air, where the burning temperature is 1300 °C. Solid particles will be fully burnt in the vertical chamber, which will significantly reduce emission of harmful substances in the atmospheric air. The aggregate is intended for periodical operation.

Liquid waste will be supplied to the kiln through a special refractory pipe, located in the hole of the horizontal chamber, and it will be incinerated in the refractory bowl placed on the grate of upper chamber.

Ash will be accumulated in the lower horizontal chamber, from which it will be periodically removed.

As a result of operation of the facility Nitrogen dioxide, Sulphur dioxide, Carbon monoxide, soot, mercury, hydrogen chloride (Hydrochloric acid), Sulfuric acid will be emitted in the air.

According to the Harmful Substance Emission Report prepared in accordance with the reporting methodology referred to in Ordinance No 408 of 31 December 2013 of the Government of Georgia, the concentration of harmful substances emitted in the atmospheric air as a result of operation of the facility (or the concentration of substances having overall impact) does not exceed respective standard norms in relation to the nearest facility (poultry raising plant) to the plant (370 m.), therefore the quantity of the emitted harmful substances is qualified as threshold limit emissions.

Under the current air protection legislation, the Draft Norms for Threshold Limit Values of Emission of Harmful Substances in the Atmospheric Air has been drawn up and agreed with the Ministry of Environment and Natural Resources Protection of Georgia.

The plant uses water for drinking and household activities, for the kiln cooling system, industrial, technical and anti-incendiary purposes. Drinking water will be supplied to the plant in special tanks. For technical purposes water will be supplied to the plant by the channel located near the plant.

For industrial purposes water will be consumed at the car washing station, where vehicles will be washed after the transportation of waste, and the floor of temporary storages of waste will be washed. The wastewater, generated in this process, will be collected in a special reservoir after going through the settler. The wastewater will be treated (disinfected) with chlorine or anolyne in that same reservoir, and then it will be directed to the Rustavi-Gardabani sewage system on the basis of an agreement.

As for the drain water, generated on the territory of the plant, the drain water generated in the sections of the territory of the plant where potential sources of their contamination are located (warehouses) will be collected in the underground reservoir through the internal sewage system. The contaminated drain water, collected in the reservoir, will undergo laboratory control and then will be directed to the Rustavi-Gardabani sewage system on the basis of an agreement.

In case of operation of the plant at the full workload the level of noise at the nearest populated house will not exceed the established threshold limit values.

Impact on soil, surface waters and groundwater is not expected at the stage of exploitation of the plant.

Industrial and domestic waste will be generated at the plant. Domestic waste will be collected in the containers, located on the territory of the plant, and will be incinerated in the incinerators of the plant. The waste of the packing materials, generated in the plant, will be utilized in the plant and the ash, generated at the stage of exploitation of the plant, will be at first placed in its storage places for cooling and then put into polyethylene bags and placed in the same room.

For the purpose of identification of the content of toxic elements in the ash it will be periodically monitored, and further management will be planned on the basis of the monitoring results. Namely, if toxic elements are not found in the ash, it may be placed on the dumping ground of solid domestic waste; if toxic elements are found in the ash, it will be transferred to the organisations having appropriate permits.

The report includes emergency situations expectable in the course of activities and the proposals for prevention of their consequences, as well as the proposals for drawing up environmental monitoring plans.

The conditions identified as a result of the environmental examination are given in Chapter III of this opinion.

III. Conditions

The management of the plant is obliged:

1. to carry out the activities during the period of establishment and exploitation of the plant in accordance with the submitted environmental impact assessment report, monitoring plan and mitigation measures;
2. to notify the Ministry of Environment and Natural Resources Protection of Georgia upon the commencement of the activities;
3. to ensure observance of release and emission sources determined in the Draft Norms for Threshold Limit Values of Emission of Harmful Substances in the Atmospheric Air, as well as the specifications of gas and dust trapping devices and accordingly observance of the established emission threshold limit values;
4. for the purpose of establishment of hazard of the ash generated in the plant, to monitor its content and further dispose it on the basis of the monitoring results;
5. to draw up the waste management plan of the company and submit it for agreement to the Ministry of Environment and Natural Resources Protection of Georgia before 31 December 2016;
6. in case of transfer of the environmental examination opinion to another person, transfer the opinion according to the procedure established by the Law of Georgia on Environmental Impact Permits.

IV. Conclusion

For the purpose of approval of the environmental examination opinion, the activity may be carried out only according to the conditions of Chapter III of this Opinion, under the environmental impact assessment report of the establishment and exploitation of the waste disposal (incineration) plant of the Medical Technology LTD, submitted for environmental examination by the Gamgeoba of Gardabani Municipality.

Head of Environmental Impact Permit Department

Tamar Sharashidze



(Name, surname)

(signed)

Seal: Ministry of Environment and Natural Resources Protection of Georgia

204861943